DOCUMENT RESUME

ED 282 823 SP 028 713

TITLE	Operational Teacher Training Objectives and Raising Achievement Levels. A Monograph.
INSTITUTION	United Nations Educational, Scientific, and Cultural Organization, Bangkok (Thailand). Regional Office for Education in Asia and the Pacific.
PUB DATE	86
NOTE	47p.
AVAILABLE FROM	UNIPUB, 4611-F Assembly Drive, Lanham, MD 20706-4391.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Academic Achievement; *Developing Nations; Educational Needs; *Instructional Improvement; Primary Education; Teacher Certification; *Teacher Education Programs; Teacher Influence; *Teacher Role; Teacher Student Relationship

ABSTRACT

This monograph addresses the fundamental planning question: When designing teacher training programs that have the specific objective of raising pupil performance, what operating procedures are necessary and what operational objectives should precede them? Part I of the monograph offers examples of the kind of pupil achievement problems confronting two countries (unnamed), followed by excerpts from works examining the process of identifying teachers' training needs and specifying the teacher competencies appropriate for the task of planning. The paper examines the whole process of planning teacher training programs and each excerpt is preceded by a brief introduction that sets the scene. In Part II, the concept of "operational teacher training objectives" is examined. The topic of planning a training process that has specified pupil outcomes is discussed, and the usefulness of the "operational objectives" concept is considered. A list of selected publications relating to training of educational personnel is included. (JD)

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SP 026 713

BANGKOK
1986

Unesco. Regional Office for Education in Asia and the Pacific.
Operational teacher training objectives and raising achievement levels: a monograph. Bangkok, 1986.
39 p. (Asia and the Pacific Programme of Educational Innovation for Development)

1. CLASSROOM MANAGEMENT - ASIA/PACIFIC. 2. TEACHER SKILL - ASIA/PACIFIC. 3. ACHIEVEMENT - PRIMARY EDUCATION - ASIA/PACIFIC. I. Title. II. Series.

371.102
153.9
370.71

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APEID

Asia and the Pacific Programme of Educational Innovation for Development

OPERATIONAL TEACHER TRAINING OBJECTIVES AND RAISING ACHIEVEMENT LEVELS

a monograph

UNESCO REGIONAL OFFICE
FOR EDUCATION IN ASIA AND THE PACIFIC
Bangkok, 1986

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Published by the
Unesco Regional Office for Education in Asia and the Pacific
P.O. Box 1425, General Post Office
Bangkok 10500, Thailand

Printed in Thailand

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BKA/86/OPE/218-1200

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INTRODUCTION

The connection between operational teacher training objectives and the APEID project for raising the achievement level at primary grades is direct and straightforward. The reasoning is that achievement levels are the result of pupil performance and pupil performance is, to considerable degree, the result of what teachers do. If teachers can be trained to do better, then the achievement level of pupils should rise. What would be needed then, are appropriate and feasible teacher training programmes. It is the purpose of this paper to discuss some of these issues that bear on certain attempts to develop operational teacher training objectives in relation to raising the pupil achievement level.

The basic concern of this paper is to prepare a workable framework within which some prescriptions might reasonably be designed and developed, and within which teachers would subsequently raise pupil performance.

The concern arises out of a series of efforts being undertaken throughout the Asia and Pacific region to raise the quality of teaching so that the benefit to pupils will result in higher achievement levels.

In the monograph, attention is given to the process of programme planning and design coupled with an examination of the utility of 'operational objectives' as a concept newly emerging in the region. The term operational objectives is coming to have a specific meaning that appears, on face value, to have practical relevance to planners and administrators. Theoretically, operational objectives may be applied to any functioning aspect of an operating system. In the present case however, closer focus is to be achieved by first confining attention to system training (or more precisely, programmes of teacher training) and second, by emphasizing the connection between the (objectives of the) teacher training programme-in-operation and the specific pupil performance results that are expected to follow.

The paper thus addresses the fundamental planning question: When designing teacher training programmes which have a specific

product in view, what operating procedures are necessary and, accordingly, what operational objectives should precede them?

The monograph is organized in two parts. The first consists of a series of excerpts from papers that were written for activities of the Asia and the Pacific Programme of Educational Innovation for Development (APEID). The excerpts have been put together to provide illustrations of selected aspects of the teacher training programme planning process. The presentation strategy used in Part One starts with examples of the kind of pupil achievement problems confronting two countries, followed by excerpts from works examining the process of identifying teachers' training needs and specifying the teacher competencies appropriate for the task of training. Finally, the paper examines the whole process of planning teacher training programmes. In each case, the excerpt is preceded by a brief introduction that sets the scene.

The points should be explained with respect to Part One. First the excerpts are illustrative only. They should not be regarded as exhaustive. A certain amount of extrapolation beyond them is necessary if they are to be related to conditions existing in any given country. Second, they refer only to selected aspects of the planning process, not the whole process. Indeed, while they lead up to the issue of operational teacher training objectives, on the whole they leave the detail of teacher training objectives themselves relatively untouched.

It is in Part Two that the concept of the 'operational teacher training objectives' comes under closer scrutiny. There, the topic of planning a training process that has specified pupil outcomes is examined and the usefulness of the 'operational objectives' concept is considered. This theoretical exercise is justified by Kurt Lewin's often quoted and respected dictum, 'Nothing is as useful as a good theory'.

Both parts of the monograph have their antecedents in a Regional Workshop held in Chiangmai from 29 October to 16 November 1985 under the auspices of the Unesco Regional Office for Education in Asia and the Pacific (ROEAP), specifically the Asian Centre of Educational Innovation for Development (ACEID). Mounted with the co-operation of the Faculty of Education of the University of Chiangmai, the workshop gave particular attention to

'operational teacher training objectives for raising the level of achievement of primary school children'. The present monograph further develops the ideas generated at the workshop and the discussion papers delivered there and the resource papers used for it.

The monograph serves as a companion volume to the report of the workshop entitled *Teacher development for better pupil achievement*, Unesco, ROEAP, 1986. The monograph was compiled with the assistance of R.S. Adams.

Part One

BETTER PUPIL ACHIEVEMENT: SOME ILLUSTRATIONS

The participants of the Regional Technical Working Group cum Training Workshop on In-service Training of Educational Personnel shared their experiences on in-service training for better pupil achievement. In the course of the discussions, the following five illustrations were extracted from the discussion papers presented by the participating countries.

Illustration 1: Identifying the problem

The aims of primary education in one country – to develop children's social and intellectual abilities including skills in literacy and numeracy – are not being fully met. During the latter part of the 1970s, public criticisms began to mount on the directions taken by the educational system and the demand for a more systematized approach to imparting knowledge and skills gathered strength.

For every 100 pupils enrolled in grade I, only 75 reach grade IV, 66 finish grade VI and about 39 reach fourth year high school. The 1982 Literacy Retention Study confirms that while an average of 34 per cent or of a cohort of first grade enrollees drops out of school before reaching grade VI, the greater proportion leaves as early as the first grade; thus serious attention is warranted.

The educational dimensions of the danger signals or indicators of risk in primary education have been identified as follows:

1. Four out of five school drop-outs in the primary grades retrogress or lose an average of two grade levels, losing most in language skill and mathematics.

2. One out of five school drop-outs reverts to an ability or literacy level below grade I.

3. Retrogression below grade I level is found at every grade level from which the drop-outs left school, but especially from grades II and III.

4. The probability for a drop-out to retrogress is there no matter what the grade level of drop-out is. However, there is a higher rate of retrogression for grade III and below.

5. Retrogression happens quite soon after dropping out.

6. After intellectual ability, the grade level completed is the second most important, explanation of achievement.

7. At grade IV, literacy achieved is 50 per cent in the vernacular, becoming successively lower for the national language and for the second language.

8. Graduates of primary schools across the nation can only answer 50 per cent of the achievement tests administered. The average primary graduate – (grades I to VI) has learned only two thirds of what should have been learned.

9. The average primary school graduate has learned least in reading, mathematics and language.

10. Teachers, on the average, are found to be weak in the higher levels of mental processes.

11. About 80 per cent of teacher applicants could only answer 50 per cent of the test items in the professional licensing examination.

12. Teacher aspirants, on the average, score below the mean score in the National Entrance Examination.

13. For many people, education means doing only the 'minimum', as schools have been accustomed to indicate 'minimum requirements' or 'minimum competency levels'.

Statistics and their interpretations show only the surface dimensions of the problems in primary education. The significant move for policy makers and educational leaders in their continuous search for solutions to improve teaching and learning is to not only centre on the basics of the second language, the national language, mathematics, civics, culture and nationalism, but to focus on the development of the right values and attitudes towards education, towards optimal learning, towards work, towards the need to stretch one's mind to full capacity from early childhood through adulthood and learning more as the world itself changes. Education is

considered important not only because of what it contributes to career goals but also because of the value it adds to the general quality of life.

Illustration 2: The problem in context

The second illustration is also concerned with identifying 'the problem', but sets the problem in a wider context.

The excerpt provides a context in which teacher training programme designed to enhance pupil achievement must occur.

The primary education scene. During the last three decades of educational development in this country, there has been a phenomenal increase in student enrolment in primary schools. There has also been significant progress in the establishment of administrative and supervisory mechanisms and in the consolidation of curriculum development processes and the production of textbooks. This rapid growth of primary education has not, however, been equalled by the increased provision of school facilities for the appropriate training of teachers, and for the production of quality instructional materials. Many primary schools do not have even the basic facilities (buildings and furniture) that are so essential for making any classroom instruction effective. The school curriculum and textbooks are centrally prescribed with little room provided for making modifications or adjustments in order to take into account the needs and requirements of a particular place, group, or community. The teacher's role is mostly passive. Teachers get practically no encouragement to be innovative and have little scope for enhancing their own knowledge and skills. The consequence of all this is that in schools not much professional activity takes place to raise the standard of classroom instruction. A general state of inertia tends to prevail in the teaching/learning processes. In fact, various studies have shown that the efficiency (input-output ratio) and the effectiveness (achievement level at the terminal stage) of primary school education have been very low. Thus, a major challenge facing educators in the country today is to improve the quality of primary education so as to raise the achievement level of children.

Pupil achievement. In this country, achievement tests in selected primary school subjects were designed on the basis of the primary education curriculum and textbooks. The detailed

breakdown of characteristics of the tests in the mother tongue, social studies and mathematics are given below:

Test/Area	*Full marks*	*No. of objectives*	*Question Short-Answer*	*Estimated time*	*Reliability*
Mother tongue	60	34	11	1 hr.	0.87
Vocabulary, structure, comprehension, sentence construction, and expression					
Social Studies	50	50	–	1 hr.	0.88
Information, reasoning, civic knowledge and practical aspects					
Mathematics	50	21	29	1 hr.	0.85
Four simple rules, word problems, fractions, measurement, algebraic expression and geometry					

The tests were administered to 1976 grade V students of six representative districts.

The majority of teachers have the School Leaving Certificate (SLC) qualification, which is the minimum qualification required for primary school teachers. About one-third of the primary school teachers do not have SLC. About 36 per cent of the teachers working in primary schools are trained. Of the total teachers, about 10 per cent is female.

Teacher training programmes, as they are being conducted in the country today, tend to be largely academic and do not adequately meet the training needs of teachers. Not enough emphasis is laid on practical training. Once teachers are trained, hardly any worthwhile follow-up programmes are undertaken to update knowledge and skills.

The average achievement of grade V completers in the mother tongue was found to be 23.32 (out of a maximum of 50) with a standard deviation of 9.44 points.

Students have demonstrated a relatively high level of achievement (a little more than 60 per cent) in comprehension and structure of the mother tongue. However, achievement in other areas such as

sentence construction, short-answer items and free expression has been low (i.e., less than 50 per cent).

About two-thirds of the total students correctly answered three out of four questions on comprehension. About the same number of students provided correct responses to eight out of twelve questions on sentence structure. These findings seem to suggest that classroom instruction in the mother tongue was focused primarily on getting students to memorize and understand sentence structures and paragraphs given in the textbook.

In other language areas such as composition and free expression, most of the students responded poorly to most of the items. Clearly, students need to be provided with more opportunities to expand their vocabularly and have more exercises in guided composition and free expression.

Achievement levels in mathematics at the end of grade V present a discouraging picture. About 85 per cent of the students scored less than 50 per cent of the total marks.

About 50 per cent of the students could solve simple word problems involving addition, subtraction, multiplication and division but they had most difficulty in solving sums that involved division and multiplication.

About 15 per cent of the students could solve simple problems involving fractions and decimals. In general, students at the end of grade V were found to have a very limited understanding of different units of measurement and their conversion.

Levels of achievement in algebraic expression and in geometry were quite low. In some schools, students were found to be ignorant of how to use a protractor and a scale. On the whole, the achievement level of the grade V completers in mathematics may be termed unsatisfactory.

In conclusion, it may be noted that classroom instruction appears to be narrowly confined to concepts and exercises given in the textbooks. Levels of achievement will not improve in any significant manner unless students actively participate in a variety of rich and meaningful learning activities.

Illustration 3: Determining teacher competencies

The third illustration treats the identification of the problem somewhat differently. It sets out to gather views from a number of respondents on what was thought to be needed in teacher education. The respondents, all involved in teaching, were either students undertaking teacher education or elementary or secondary teachers and administrators currently in service.

They were asked to indicate what teachers needed in order to deal with disadvantaged students and accordingly raise the students' achievement levels.

The illustration serves to: (i) provide an example of a needs assessment procedure; (ii) present a catalogue of relevant competencies; and (iii) take a step beyond problem identification and towards finding a solution.

Development of a comprehensive training scheme. Since competency-based programmes emphasize outcomes rather than inputs by stating clear, observable goals and objectives in advance and by specifying which student learning outcomes or areas of behaviour are to be promoted, they are being welcomed and accepted in many countries.

This study was undertaken as an attempt to develop a comprehensive training model based on competencies for teachers who work with students with learning problems. The purpose was to identify the primary competencies perceived by teacher education students, in-service elementary and secondary teachers and school administrators to be essential to successful teacher performance in dealing with disabled students and raising achievement levels. Specifically, the study sought to achieve the following objectives:

1. To analyze, identify, and generalize the primary competencies needed by teachers working with students having learning problems in normal primary and secondary school classrooms.

2. To examine the relative degree of importance and consensus of perception for each identified competency and categorized group of competencies.

Operational teacher training objectives

3. To design a new and comprehensive model of teacher education for those working with students with learning problems.

What follows next is a listing of a series of competency statements grouped together under the main headings: Diagnostic and Evaluation Skills; Professional Technical Skills; Interpersonal Skills and Administrative Skills. These were derived from responses to a number of critical incident' questions and responses, and form a consus on competencies needed.

Major Category	*Sub-category*	*Specific Competency Statements*
Diagnostic and evaluation skills	*Diagnosis*	1. Demonstrate ability to gather data related to student behaviour.
		2. Analyze student misbehaviour in the classroom and identify causes of such behaviour.
		3. Assess students' personal history and identify their behavioural characteristics.
		4. Identify situational factors influencing student behaviour.
		5. Predict the level of student performance and achievement.
		6. Assess the needs of individual students.
	Evaluation	7. Design, develop, and administer appropriate instruments to measure student development.
		8. Interpret objectively the findings obtained through the use of instruments.
		9. Rate student performance and behavioural changes in relation to prescribed criteria.

Major Category	*Sub-category*	*Specific Competency Statements*
		10. Apply the results of evaluating student performance and behavioural changes to successive activities.
		11. Develop improved methodologies for the study of students with learning problems.
Professional technical skills	*Knowledge*	12. Demonstrate fundamental concepts of psychology related to student development.
		13. Exhibit the basic knowledge of instructional and guidance theories and programmes for the education of those students.
		14. Demonstrate professional knowledge related to subject matter areas and behaviour management.
	Preparation	15. Construct specific objectives or criteria to be reached through teaching and guidance.
		16. Design teaching and guidance programmes based on obtained information.
		17. Select supplementary materials and resources to be used effectively for teaching and managing students.
	Behavioural intervention	18. Establish rapport with students in the classroom.

Major Category	*Sub-category*	*Specific Competency Statements*
		19. Select and administer feedback techniques by using effective reinforcement systems.
		20. Facilitate student-centered activities by stimulating all students appropriately in light of their individual differences.
		21. Demonstrate the ability to operate group processes in teaching and managing students.
		22. Counsel students concerning their difficulties in learning and social behaviour.
		23. Select and administer appropriate treatment procedures for students.
		24. Control emotional feeling with self-controlled manner.
		25. Equip with strong persuasive abilities.
		26. Demonstrate skills tc assist students in developing positive self-concepts.
		27. Assign appropriate roles and responsibilities to students.
		28. Make consistent efforts for self-improvement in dealing with students with learning problems.
	Instruction	29. Select effective types of instructional systems.

Major Category	*Sub-category*	*Specific Competency Statements*
		30. Stage and implement teaching strategies and utilize effective audio-visual aids.
		31. Facilitate student learning by providing precise, remedial, compensatory, and realistic teaching techniques.
		32. Grasp the main ideas of course content and summarize them.
		33. Ask lower- and higher-order questions.
		34. Demonstrate the ability to assist note-taking of students.
Interpersonal skills	*Personality*	35. Demonstrate professional values, attitudes, and beliefs as educators.
		36. Respond to students with an open and stable attitude.
		37. Manage a consistently sincere attitude toward students.
		38. Demonstrate self-confidence in dealing with those students.
		39. Exhibit enthusiasm over one's responsibilities.
		40. Win strong confidence from students by dealing with them kindly, affectively, and fairly.
		41. Demonstrate a sense of humor.
		42. Interact with students with adaptability.

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Major Category	*Sub-category*	*Specific Competency Statements*
		43. Display qualified leadership by increasing group effectiveness.
	Communication	44. Demonstrate the ability to communicate with students clearly and precisely.
		45. Identify with student concerns and needs.
		46. Maintain favourable human relationships with others.
		47. Maintain close and co-operative interaction with parents of students.
Administrative skills	*Administration*	48. Demonstrate sound behaviour as an educated person.

Other findings showed up differences between the respondents that were associated with their preferred level of teaching.

1. Secondary teachers placed more emphasis on instruction than did teacher education students. Among ten individual statements, secondary teachers rated three as having greater importance while college students in teacher education programmes rated seven as having more importance.

2. For elementary teachers and secondary teachers, the responses to the sub-categories of Diagnosis, Communication, and Administration, and eleven individual statements were shown to be significantly different. Elementary teachers placed more emphasis on all of these sub-categories and individual competencies than did secondary teachers.

3. The responses of college students in teacher education programmes and elementary teachers for the instruction and administration sub-categories and their eleven component individual competencies were significantly different. Two sub-categories and nine statements were emphasized more by elementary teachers whereas two statements were

emphasized more by college students in teacher education programmes.

4. While the responses to four individual statements were revealed to be different among four groups of experienced teachers, no difference between these four groups attained statistical significance in any categorical competencies.

Illustration 4: From competencies to training

The fourth illustration goes beyond the listing of derived teacher competencies to make an association between them and the training programme.

The number of competencies is noticeably fewer than in the last instance and they are grouped according to a system of classification that goes a little wider than the classroom and classroom related activities.

Competencies required for teacher training. A basic principle of operational teacher training is that it should be functional and effective in the sense that the training should start where the teacher is and should gradually build in planning, teaching and evaluating competencies. It should focus on raising the motivation level and the morale of the teacher by developing specific skills and by bringing about positive changes in students through the use of these skills. It should also broaden the teacher's outlook and provide tools and techniques for enlisting co-operation from related agencies and people in improving the quality and impact of the primary school.

In accordance with these basic tenets, the major substantive aspects that should be covered in an operational training programme for in-service teachers are as follows:

a) Planning and preparing for classroom instruction

b) Classroom management

c) Teaching techniques

d) Guiding pupils

e) Evaluating pupil progress

f) Contact with the parents

g) Participation in professional activities

h) Participation in the community activities

Until now, in-service teacher training in the country has either been too academic or too sporadic in nature. The short-duration training programmes have mainly focused on different techniques of teaching. In the absence of appropriate teaching aids and supplementary materials for students, activity-oriented classroom instruction is rarely sustainable.

Different teaching techniques cease to be appealing to teachers once they do not appear to be effective in bringing about achievement gains in students. However, the classroom teaching/learning process is only a part of the larger whole that affects student's achievement level. Thus, it is important that any training programme is comprehensive enough to encompass major teaching and related factors.

A brief outline of the objectives vis-a-vis the major substantive aspects of an operational teacher training programme is given below.

Substantive Aspects	*Objectives*		
	Knowledge	*Skills*	*Attitudes*
a) Planning and preparing for classroom instruction			
– Determination of achievement level	x	x	
– Diagnosis of learning difficulties	x	x	
– Unit and lesson plans	x	x	x
– Remedial instruction	x	x	
– Preparation of instructional materials	x	x	
– Selection of supplementary materials	x		
b) Classroom management			
– Management techniques	x	x	

Substantive Aspects	*Objectives*		
	Knowledge	*Skills*	*Attitudes*
– Group dynamics	x	x	
– Small group instruction	x	x	x
– Individualized instruction	x	x	x
– Budgeting time for specific instructional tasks	x	x	
c) Teaching techniques			
– Teacher-centered	x	x	
– Student centred	x	x	x
– Activity-oriented	x	x	x
– Group and individual projects	x	x	
d) Guiding pupils			
– Grouping pupils in terms of mastery level and by nature of problems	x	x	
– Guiding pupils individually and in groups	x	x	
– Helping students to keep record of their progress	x		
e) Evaluating pupil progress			
– Evaluation as a process	x		
– Evaluation techniques and tools	x	x	
– Use of evaluation results	x	x	x
f) Contacts with the parents			
– Parental role in the education of their children	x		x

Substantive Aspects	*Objectives*		
	Knowledge	*Skills*	*Attitudes*
– Facilitating students study at home	x	x	
– Techniques of keeping parents informed	x	x	
g) Participation in the professional activities			
– Peer group observation and evaluation	x	x	x
– Participation in meetings, workshops and research studies	x	x	x
h) Participation in the community activities			
– Teacher's role in developmental activities	x		x
– Relations with developmental agencies	x		
– Modes of participation	x	x	

Finally, it may be noted that the extent of coverage and depth of treatment of each objective have to be worked out in detail in consideration of the specific needs of a group of teachers.

Illustration 5: Planning training Programmes

The final excerpt in Part I sets the scene for Part II by asking some fundamental questions about what training programmes are for, about what they might reasonably expect to achieve in the circumstances and about efficiency in planning.

The paper was based on the development of a reading programme but the points made are germane to any training programme.

As will be seen the paper differs quite significantly in that the author treats operational teacher training objectives as synonymous with operational teaching objectives.

Need to operationalize teacher training objectives. This paper was prepared on the premise that primary school teachers need to develop new insights, competencies, attitudes and values that will enable them to help raise achievement levels.

For the purpose of this paper, the development of teacher training objectives will be discussed in connection with planning and designing training programmes on the teaching of reading at the primary level. Selected methods of developing operational teacher training objectives will be presented and illustrated.

Achievement in any area in the primary school curriculum depends, to a great extent, on the child's ability to read. Thus, reading is the tool for learning. To help raise achievement levels in primary education, therefore, teachers must know how to teach reading and how to diagnose and remedy difficulties.

The effective teaching of reading has numerous requirements. There is a danger that in the process of designing and implementing training programmes to improve reading instruction, these requirements are gradually lost. This erosion of educational objectives was expressed in the 1974 Report of the Experts on Educational Goals, Aims and Objectives in Asia:

> When a curriculum plan is developed and subjectwise syllabuses are worked out, some objectives are lost sight of. Some more are lost when textbooks are prepared. At this stage, the cognitive objectives are largely retained, but those of the affective domain often get emaciated. Then, during the process of teaching and learning some more objectives are lost. And finally, at the stage of examination, most of the vital objectives are lost. (Unesco-NIER, 1974: 22)

Hence, there is a need to operationalize training objectives.

A basic consideration in programme planning is the statement of the overall purpose of the programme and its translation into specific objectives. The skill with which the translation is done greatly influences the success or failure of the programme. This is true whether it is for pre-service training of prospective teachers, or for further training and retraining of teachers in service.

Operational teacher training objectives

Statements of overall purposes or *goals* are broad, comprehensive, and long-term. They provide global direction to teacher education as a whole. To be meaningful and operational, they should be paraphrased into specific statements which explicitly express the desired insights, skills, competencies, attitudes and values the trainees are expected to manifest after training.

There are many desirable changes that the trainees should undergo. However, not all of these possibilities can be truly realized. This could be due to factors inherent in the training programme itself or brought about by the kind of teachers in need of training or simply because of vague and nebulous statements of goals and objectives. Careful deliberation and planning is therefore imperative. Planning increases the chances of bringing about desired results; lack of it can only mean a great waste of time, effort and resources; lack of it can adversely affect training inputs and ultimately result in what the APEID Joint Innovative Project on Raising Achievement Level in Primary Education is so concerned about – 'a very substantial proportion of children failing to acquire the basic learning skills by the end of the primary cycle'.

The process of developing operational teacher training objectives cannot be independent of programme planning and designing. It even extends to implementation of the products of training – anticipating possible barriers and providing alternatives so that what are envisioned as expressed in the objectives are fully achieved. In short, to operationalize teacher training objectives is to ensure the successful implementation of the results of training.

A significant factor in programme planning is the target clientele. What do they bring into the programme in terms of their basic orientations, motivations in undertaking training, their prior knowledge and experience in teaching, their existing competencies and difficulties, and their expected roles after training?

While an in-service training programme may not be limited to the needs expressed by the trainees, it should take these needs into account, if the training programme is to be relevant to the trainees' work.

If needs assessment is not possible before planning is undertaken, training objectives should be considered tentative and made flexible enough to accommodate the results of a needs assessment

conducted on the first day of training. Whatever strategy or device is used to get needed information about the trainees, programme planners should ask themselves the following questions:

1. How does each part of the training programme relate to what the trainees already know or do not know or the background situation, over which the trainees have no control?

2. What adjustments and preparations might the trainees have to make to apply what the training programme recommends? Are these feasible and reasonable?

3. If the trainees implement what is recommended, will they be able to ascertain the general and specific steps they need to take as they go along? Are the recommendations clear to them?

4. How may the relative success or failure of the combined efforts of trainers and trainees be evaluated?

Concern for the trainees' existing competencies and difficulties, prior knowledge and experience, role expectations, and possible implementation problems are implied in these questions. They also imply careful analysis of what the purpose(s) of the training programme really is. It is a time-consuming process, but answers to the questions will give direction to the nature of activities to be included, the scope and sequence of content, the relative emphasis to be given to each component, and implementation alternatives. These decisions will greatly influence the translation of the overall purpose into specific and operational training objectives.

Task analysis is a systematic process of defining desired outcomes, identifying the variables which affect these outcomes and developing a plan whereby these variables may be managed so as to produce the desired outcomes. The procedural steps of task analysis are as follows:

1. Defining goals before investing valuable human and material resources.

2. Defining skills and knowledge which are required to achieve the desired outcome.

3. Defining the effect of specific characteristics of skills and knowledge on the production of the desired outcomes.

4. Developing a plan with alternatives for the allocation and utilization of human and material resources which contribute the most positive effect and produce the desired outcome.

Task analysis identifies the variables which will affect the desired outcome and subsequently enables the educational engineer to design procedures.

In conclusion, programme planners are often tempted to start with ambitious statements of goals and objectives, and plunge the trainees into all kinds of cognitive acquisitions and behaviour modifications, because of the desire to teach so much in so little time. But should all that they ought to know be taught? How does one decide which to include? What relative emphasis should be given to each of the components? How may these be prioritized? What should programme planners take into account so that goals and objectives are likely to be achieved within the time available, under conditions stipulated, and with the kind of clientele involved?

One consideration is the prospective clientele of the proposed training programme. What prior knowledge and experience do they bring into the training programme? What are their needs, interests, existing competencies and basic orientations?

A second consideration is the consistency of goals and objectives with psychological principles and theories of learning. A working knowledge of the psychology of learning enables programme planners to determine appropriate placement of objectives and activities in the learning sequence, helps them discover the learning conditions under which it is possible to attain certain objectives, and provides a way of determining the appropriate relationships among the objectives.

The test of any training programme is whether or not the trainees actually change their teaching behaviour in desirable ways and whether they can implement whatever they gained from the training.

In summary, to operationalize training objectives is to ensure their full implementation by taking into account the following:

1. background of the trainees;
2. what the trainers have to offer by way of their mastery of the discipline, how they relate with the trainees and co-trainers;
3. consistency of the objectives and design of the training programme with psychological foundations of teaching and learning;
4. current educational thrusts of the Ministry of Education; and
5. possible barriers to successful implementation of the products of training.

Defining objectives is not an end in itself. It is a tool for continuous improvement. The process of clarifying goals, then working toward them, then appraising progress, then re-examining the goals, modifying them and clarifying them in the light of the experience and data is a never-ending procedure.

Part Two

DEVELOPMENT OF OPERATIONAL TEACHER TRAINING OBJECTIVES

Part Two considers some of the basic aspects involved in developing teacher training objectives that are intended to improve school achievement levels.

The definition of operational objectives. At the outset there is a need to clarify the basic concept of this monograph; operational objectives. To do so, the two components are considered first separately and then together.

i) *Objectives* is taken to mean: 'the target aimed at' or the intention expressed that 'certain events are to occur' or that 'expected conditions will be brought out'. (Once objectives are achieved they can be regarded as 'ends'. Prior to that they can be seen as anticipated or expected ends).

ii) *Operational* is taken to mean: 'proceeding' or 'functioning' or 'in-action'. By definition, the meaning of operational is confined to *process*.

iii) *Operational objectives* then means: either 'intentions expressed about operating a process' or 'intentions expressed about an expected product that is itself a process'.

Operational objectives are distinct from behavioural objectives in that objectives stated for a process may not necessarily be expressed in behavioural terms. On the other hand, some behavioural objectives may fall under the broader operational objectives – when they are process-related behavioural objectives. Operational objectives, however, cannot be subsumed under or be substituted for behavioural objectives.

Furthermore, operational objectives have usually tended to be applied to systems (including programmes). While there is strictly no reason why operational objectives should not be applied to people

(provided they are seen in process terms) this has not conventionally been done.

Current usage suggests that a convenient distinction can be made between operational and behavioural objectives by assuming that, 'Operational objectives are to systems (or programmes) as behavioural objectives are to people'.

Primary achievement levels. Improving achievement entails the raising of the performance level of individual pupils to the extent that the improvement is reflected in achievement levels. In this respect, the Regional Workshop held at Chiangmai (26 October-16 November 1985), in considering various national achievement level criteria, found it convenient to describe levels as falling along a continuum. At one end is located the minimal criterion; basic literacy – at the other end, the optimal criterion; the development of individual potentiality to its fullest. In between lies a variety of alternatives including for example, national (examination) averages, standardized achievement test norms, hypothetical 'standards'. Most countries have now exceeded the minimal literacy level. Few, if any, have any prospect of achieving the optimal level in the foreseeable future. If achievement levels are envisaged along such a continuum, there is continuing opportunity to aim for a higher level once the previous level has been achieved. Educational sights can always be raised.

The paper will limit itself to those aspects of pupil performance and achievement that are open to influence by the teacher and can legitimately be included in the teacher's role. Before any conclusion can be reached about what teacher training objectives *should* be, it is necessary to come to terms with what teachers are capable of doing to improving the level of pupil achievement.

Circumstances for raising the level of achievement are likely to vary from case to case, with respect to the conditions existing in the system at the beginning, (e.g.; the extent of universalization of education, drop out rates, repetition rates, teacher-pupil ratios, urban-rural distributions, gender ratios, the status of minorities, and resources). They will also vary, even more importantly in the present context, with respect to the condition of the teaching force and the nature of the curricula.

Because teachers, and how they teach, are both central to the present paper, there is a need to examine them further to try to

provide a set of reference points which may later be applied to any education system in order to establish a baseline from which to begin the task of determining operational training objectives.

Teacher potential. By asking what the extent of professional teacher training and academic training that teachers characteristically have in the system is, Beeby(1) developed a useful model for categorizing education systems. He arrived at four system types defined by the relative condition of the teacher as under:

Type 1: Poorly educated and untrained

Type 2: Poorly educated and trained

Type 3: Better educated and trained

Type 4: Well educated and well trained

If it is accepted that professional and academic training both contribute to a teacher's effectiveness, then Beeby's model carries implications for planning new operational teacher training objectives. Clearly it is necessary to start from existing levels of teacher capability. However, a further dimension must be introduced. This further dimension which might be called 'experience', refers not to teaching experience but to the 'real world' experience in matters integral to 'experience-related' or 'work-related' curricula. The more curricula become vocationally oriented, socially relevant and indigenous, the more important life experiences become for teachers.

If 'life experience' is made a third dimension in the Beeby model, then eight theoretically possible types of education systems result. They are listed below with the extent of education, training and experience designated, plus or minus merely to indicate relative conditions rather than qualitative difference.

Despite its crudeness, the classification system does permit differentiation among systems or subsystem. Even though there are certain limitations in this category system, it calls attention to three very important aspects of teacher training that should be taken into account when beginning to decide on operational teacher training objectives (the academic professional and life experience and backgrounds possessed by the teachers involved).

Figure 2. Types of education systems or sub-systems

	Teaching Force Capability		
	(Academic)	*(Professional)*	*(Life Experience)*
Type 1	Education+	Training+	Experience+
Type 2	Education+	Training+	Experience–
Type 3	Education+	Training–	Experience+
Type 4	Education+	Training–	Experience–
Type 5	Education–	Training+	Experience+
Type 6	Education–	Training+	Experience–
Type 7	Education–	Training–	Experience+
Type 8	Education–	Training–	Experience–

There are several questions that follow from the points made above, setting the boundaries within which the teacher and learner can be addressed: (i) What aspects of pupil achievement actually can come under the influence of the teacher? (ii) How may teachers best exert a constructive influence? (iii) What should the role of the teacher be in improving educational achievement?

Pupil achievement and the teacher. There are two broad ways in which teachers may influence pupil achievement. The first is by the quality of instruction given in a way that whatever is to be learned, understood or appreciated is done so, accurately and economically. The influence of the teacher increases the more that the subject he teaches is known exclusively to him.

The second way teachers may influence achievement is in the extent to which they succeed in motivating pupils so that they do learn. The significance of motivation is seen more clearly, though negatively, in situations where teachers become influential in discouraging children from continuing with their education. In some countries, schooling can become such a distasteful experience that pupils drop out or seize other opportunities sooner than is in their best interests. Whenever the situation is such that it is optional for pupils to continue their schooling, and few pupils do choose to do so, it is possible that the teachers themselves may be among the causes of drop-out.

The roles of 'motivator' and 'encourager' do not come easily when conventional expectations are that teachers should be authoritarian, judgemental, punitive and dictatorial. Role changes of the implied magnitude entail careful retraining, acquisition of new organizational techniques and social skills as well as a discerning understanding of how children learn, what stimulates their interests and how learning difficulties can be overcome.

The role of the teacher. It is customary to regard the role of the teacher as going beyond the techniques and practices used in daily teaching. Implied are (i) some overarching, unifying features that distinguish teaching from other occupations; but also (ii) the idea that teaching is something more than classroom performance. In one attempt to spell out some of the dimensions of the teachers' role, Adams(2) identified five 'domains' or contexts that characteristically feature as points of contact in the life of the teacher. They are: the individual pupil; the classroom; the wider environment of the school; the educational system as a whole; and the immediate community. The implication is that special competencies, skills and values are required for each context – individuals, pupils, classroom, school, education system and community. It should also be noted in passing, that individual teachers, as they proceed through their careers, are likely to be appointed to different positions which entail different tasks. Over time, an individual teacher becomes a supervisor, principal, teacher trainer or administrator. In the process, he/she will require different sorts of competencies and skills and will accordingly require different sorts of training. For the purposes of the present project however, it is reasonable to ask, in which of these contexts will the actions that teachers take be likely to affect the achievement levels of pupils? It follows that the greatest emphasis will be placed on the two contexts – individual pupil and classroom as they are most directly related to achievement.

Behind most conceptions of the teachers role lie the idea that teachers manage and manipulate the classroom community using: (i) their own knowledge and understanding of the substantive 'subjects' of the curriculum; and (ii) their skill with teaching aids and technologies and other relevant artifacts to manoeuvre the cognitive, psychomotor and affective development of their pupils in a way that produces learning and performance achievement. Implicit in all of this is the idea that teachers ought to know about: (1) learning; (2) teaching; (3) subject matter; (4) management; and (5) evaluation.

The extent to which teachers develop this knowledge depends, no doubt, on their current capability, the time and resources available, and the desired outcome. For example:

1. The academic study of learning can lead deep into the field of learning theory, the field of human development, the study of perception, motivation, and personality.

2. The study of teaching can range all the way from broad general theories of teaching to specific techniques for specific subjects. It can include the study of and skill training in educational technologies, educational media, and contemporary methods.

3. Subjects can be numerous, more numerous than those customarily listed by the primary (or secondary) school curriculum. They can include those that contribute to the understanding of man (psychology, physiology, anatomy). They can include those that contribute to the understanding of man in society (history, sociology, economics, politics). They can range across the substantive fields of the sciences, social sciences and humanities, and indeed all the professional domains (law, medicine, religion). They can incorporate practical fields also, e.g. botany, agronomy, agriculture, horticulture and business studies.

4. Classroom management may also be elaborated to include group dynamics, social psychology, organization theory and decision making.

5. Evaluation is also a field liable for considerable elaboration with respect to the numerous models of the specific formative and summative techniques.

In the last analysis however, what is proposed for any teacher training programme must fall within the reasonable constraints of 'needs' and resources. The APEID 1982 publication on *Social change and the training of educational personnel(3)* gives a guide.

Teachers. Once a realistic appraisal of the existing capabilities of teachers has been made, it is suggested that competencies be grouped as follows: teaching competencies; organizational competencies and community competencies.

Operational teacher training objectives

a) *Teaching competencies.* At the primary school level, teachers should demonstrate competence in the subject matter required by the syllabus for the entire school in the subjects which they teach; at the high school level, to demonstrate competence beyond the level of the next public examination in any subject which they teach; at both levels, the capacity to design instructional sessions, to prepare appropriate instructional materials, to conduct class, group and individualized instruction, to assess student progress, and to evaluate performance in any part of the syllabus which they teach.

b) *Organizational competences.* Teachers should expect to:

- manage the physical resources of their classrooms and plan the availability of equipment for future lessons;
- contribute to the administration of particular parts of the school at the request of the headmaster;
- help induct new teachers;
- participate in in-service training at regular intervals.

c) *Community competencies.* Teachers should:

- interact with parents;
- assist community members who share in school management;
- participate in community development projects;
- assist non-teachers who contribute to school programmes to teach effectively;
- teach in formal and non-formal programmes for adult community members.

A further guide has been given by the report of the Regional Technical Working Group cum Training Workshop on In-service Training of Educational Personnel held in Chiangmai, Thailand (1985), under the title of 'Teacher Development for Better Pupil Achievement. Reflecting on the above regional workshop, it gives the following four points as important tasks required for raising pupil achievement:

1. the individualization of learning;
2. more utilization of educational media, technology and innovations;
3. more co-operation with parents, peers, the community and economic agents of production; and
4. more flexibility in acquiring knowledge and in collaborating with other professionals and intellectuals.

Each will be taken in turn but with the imposition of a structure derived from the discussion above and the addition of further 'tasks', not at the time featuring in the Regional Workshop.

The individualization of learning

Knowledge needed by teachers

1. About learning	–	learning theory: field theory behaviour theory
2. About teaching	–	methods/strategies
	–	teaching styles
3. About management	–	decision making
	–	planning
4. About evaluation	–	observation
	–	assessment

Skills to be derived

1. Planning skills	–	diagnosis of individual, social, physical and intellectual needs
	–	determining instructional goals and objectives based on learner needs
	–	designing instruction appropriate to these goals.

Operational teacher training objectives

2. Teaching performance skills
   - instructing constantly with goals
   - instructing using a repertoire of appropriate instructional models
   - demonstrating relevant subject matter knowledge
   - using resources (and technology) effectively
3. Management
   - using resources parsimoniously
   - individualizing
   - micro-teaching
4. Evaluation
   - monitoring
   - process assessment
   - outcome assessment

Utilization of educational technology and motivation

Knowledge needed

1. About learning
   - media use
   - media content
   - multi-culturalism
2. About teaching
   - social change/dynamics
   - development of aids
3. About management
   - media availability
   - media capability
4. About evaluation
   - assessment of outcomes/impact

Skills needed

1. Planning skills
   - lesson design
   - media logistics

2. Teaching performance skills
   - using various media (VTR; audio; microcomputers; film; multi-media)
   - interaction analysis
   - working with groups
   - organizing
   - motivating

Co-operation with parents, peers, the community – agents of production

Knowledge needed

1. About learning
   - problem solving
   - community/adult learning
2. About teaching
   - community: needs and aspirations
   - sociology
3. About management
   - group dynamics
   - barriers to interpersonal dynamics
   - strategies
4. About evaluation
   - research findings

Skills needed

1. Planning skills
   - application of educational theory to practical situation
   - synthesizing identified problems and studies
   - identifying needs
   - evaluating opportunities

Operational teacher training objectives

2. Performance skills	– relating philosophical and socio-economic developments in the context of teaching
	– curricula design (multi-cultural)
	– writing performance objectives
	– relating subject-matter to clinical education problems
	– designing new programmes/for para/professionals/bilingual children
	– interacting effectively with the community/parents

Flexibility in acquiring knowledge and in collaboration with other professionals and intellectuals

Knowledge needed

1. About learning	– child development/language ethics/cognition
	– maturation processes
	– analysis of learning problems
2. About teaching	– instruction
	– educational practices
	– curriculum development/design
	– para professional training needs
3. About management	– administration/supervision
	– interdisciplinarity
	– co-operation

Skills needed

1. Planning skills	–	to apply knowledge of concept development to modify instructional programmes
2. Performance skills	–	working in a team
	–	using group dynamics to improve relationships
	–	working with neighbouring teachers and pupils
	–	organizing and motivating for change
	–	proficiency in working with the less skilled.

The amount of knowledge or skills, goes beyond the (artificial) boundaries set around them above. Clearly also, the list is not exhaustive and may perhaps best be seen as a move in the direction of establishing a relevant taxonomy. The further competencies and skills required by teachers were discussed in the aforesaid Regional Workshop and presented as under:

1. ability to design curricula for various cultural backgrounds
2. skills in programme planning: objectives, budgeting coordination of resources and proposal writing
3. ability to suggest remedies for inappropriate teacher behaviour
4. ability in self-analysis of teaching
5. ability to interpret research data
6. analysis of professional problems into researchable questions
7. ability to supervise classroom interns
8. skills in teacher training
9. ability to use a problem-solving approach in teaching

Operational teacher training objectives

10. ability to define tasks and responsibilities
11. positive attitude towards slow learners
12. systematic consultation with a corps of professional consultants on the basic issue of pre-service and in-service training
13. direct participation in a training-oriented teacher education programme
14. identification of specific relationships between teacher roles and subject matter
15. increased relevance of methods courses
16. development of a plan for teaching practice in co-operation with the public schools
17. interaction and interchange of ideas across training programmes
18. knowledge of various models for certification.

Planning programme

One important assumption lying behind this paper has been that any development of operational teacher training objectives designed to improve pupil achievement must be situation-specific. It must depend on the existing circumstances in a given country and as well on the specific aspiration held for raising achievement. If for example, the aspiration is to raise reading achievement, the sequence should be:

i) an assessment of the present level of achievement;

ii) an identification of the factors affecting that achievement;

iii) the isolation of those factors directly under the control of the teacher;

iv) an assessment of the current capabilities of teachers;

v) the specification of pupil performance objectives that can reasonably hold, assuming that some teacher training changes can be made; and

vi) the careful specification of the changes in teacher training that should therefore be made.

Even if the desire for improving the achievement level was a general over-all improved pupil achievement, a similar analysis, planning and specification process would be desirable.

Development of operational teacher training objectives

As a procedure for the drawing up of operational teacher training objectives to improve the level of pupil achievement, the following steps would be consistent with the earlier discussion:

1. Determine the area in which achievement is to be improved.
2. Make a realistic assessment of what the level of achievement is now.
3. Make a pedagogical judgement about what can be done by teachers to achieve the desired level of achievement.
4. Make a realistic assessment of teachers' present capabilities noting discrepancies between what they can do now and what they will be required to do later.
5. Examine the discrepancies to determine what training will need to be undertaken to overcome them.
6. Analyse the anticipated training requirements in terms of their functional elements, i.e. knowledge and skill required by the teachers:

   e.g. a) knowledge about learning, teaching, subject matter and knowledge about management,

   b) planning skills, and teaching performance skills.

7. In the light of these functional elements, determine what functional elements are required in the training programme i.e. what has to be done to develop in the trainees the required knowledge and skills.
8. Convert this last set of functional elements into a set of stated objectives.

9. Either identify those that are in *operation terms, i.e. they* specify what is to be done or how to do it; or convert those that are not accordingly.

The report *Social change and the training of educational personnel* specifies the procedures for item 9, in the following way:

i) write the general aims and specific objectives of teaching a subject in operational terms;

ii) plan learning experiences both in the institution and outside the institution;

iii) prepare the list of learning aids available in the school as well as in the community;

iv) suggest teaching approaches appropriate to various units/ sub-units of instruction; and

v) interpret the results of evaluation for the learner, for the teacher, for modifying the curriculum aims, the material or teaching methodology.

The task entailed is both a complex and demanding one. However so is education and so is the process by which knowledge about education is generated. If the greatest advantage is to be taken by applying that knowledge, it is only to be expected that careful, thorough and difficult work will be entailed. Hopefully, however the returns would far exceed the initial investment.

Conclusion

The concluding statement also comes from the report of the Regional Workshop held in Chiangmai, Thailand.

Operational teacher training implies that the training is a response to the specific needs of a particular situation and is directly tied to bringing about positive changes in school instructional practices. It needs to be systemic in nature so that the in-service training programme is focused on equipping teachers with functional skills. That is, the teachers after undergoing training will be able to put into practice specific strategies that are presumed to be relevant to raising pupil achievement levels. It needs to be both realistic and objective so that in-service teachers develop new competencies that have

measurable impact in student learning and achievement levels. Finally, the utility of the operational teacher training objectives depends on the extent to which they provide substantive and methodical direction to the management of training programmes.

The relationship of teacher training to teacher action in the classroom and its subsequent effect on pupil outcomes may not be a simple one. However, that should not subvert the specifying of teacher training objectives in consonance with the problems faced by the teachers, or from relating training to more affluent teaching/learning processes that will produce specific pupil gains. Needless to say, the process of deriving operational teacher training objectives and relating the in-service programme to specific instructional acts and pupil outcomes requires constant attention and commitment.

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* Out of stock

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